Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Previously Presented) A patient positioning assembly for adjusting a patient position during radiosurgery, said patient positioning assembly comprising:

a. a support device to support the patient during treatment; and

b. a controller coupled to the support device to control the motion of said support device, said controller comprising:

i) means for receiving pre-treatment scan data representative of one or more pre-treatment scans of a treatment target within the patient, the pre-treatment scans showing the position and orientation of said target with respect to a pre-treatment coordinate system;

ii) means for receiving image data containing information regarding the near real time position and orientation of said target with respect to a treatment coordinate system, said treatment coordinate system having a predetermined relationship to said pre-treatment coordinate system; and

iii) means, responsive to said pre-treatment scan data and said image data, for generating at least one motion command signal for implementing one or more corrective motions of said support device to substantially match the position and orientation of said target as shown in said pre-treatment scan data of said target with the position and orientation of said target of the near real time image data.

2. (Currently Amended) A patient positioning assembly in accordance with claim 1, wherein said controller includes user interface means for enabling ~~the~~ a user to interactively control said corrective motions of the support device, by implementing one or more user-selectable functions.

3. (Previously Presented) A patient positioning assembly in accordance with claim 1, further comprising at least one sensor for sensing the position and orientation of said support device, and for generating at least one sensor signal representative thereof; and

means, responsive to said at least one sensor signal, said pre-treatment scan data, and said image data, for generating at least one motion command signal for implementing one or more corrective motions of said support device, and at least one actuator for moving said support device in accordance with said motion command signal from said controller.

4. (Canceled)

5. (Currently Amended) A patient positioning assembly in accordance with claim-43, further comprising a support device interface module for enabling said support device to interface with said sensor, said controller, said actuator, and said user interface means; said support device interface module includes:

means for communicating with said sensor, so as to receive from said sensor said sensor signal;

means for communicating with said controller, so as to provide position feedback to said controller in accordance with said sensor signal, and so as to receive said motion command signal from said controller; and

means for communicating with said actuator so as to transmit said motion command signal from said remote controller onto said actuator.

6. (Canceled)

7. (Previously Presented) A patient positioning assembly in accordance with claim 1, wherein said one or more corrective motions of said support device have at least three degrees of freedom.

8. (Previously Presented) A patient positioning assembly in accordance with claim 1, wherein said one or more corrective motions of said support device have at least five degrees of freedom.

9. (Previously Presented) A patient positioning assembly in accordance with claim 8, wherein said five degrees of freedom comprise three translational degrees of freedom for translations along mutually orthogonal x-, y-, and z- coordinate axes, and two rotational degrees of freedom for roll- and pitch- rotations around roll- and pitch- axes, respectively.

10. (Previously Presented) A patient positioning assembly in accordance with claim 8, wherein said controller further comprises means for converting said information regarding near real time target position and orientation into one or more units of motion of said support device in at least one of said five degrees of freedom.

11. (Currently Amended) A patient positioning assembly in accordance with claim 8, further comprising an external device for correcting for a sixth degree of freedom of said corrective motions of said support device, wherein said sixth degree of freedom is a rotational degree of freedom for yaw-rotation about a yaw-axis.

12. (Original) A patient positioning assembly in accordance with claim 8, wherein said external device comprises a robot.

13. (Currently Amended) A patient positioning assembly in accordance with claim ~~1~~ 3, wherein said controller further comprises: means for detecting one or more errors, means for reporting one or more errors, and means for correcting one or more errors.

14. (Currently Amended) A patient positioning assembly in accordance with claim 13, wherein said one or more errors comprise at least one of:

a) a communication error between said controller and one of said sensor, said support device, and said actuator;

b) an error in said information regarding target position and orientation;

c) an error in ~~one or more of~~ said corrective motions; and

d) an interface error between said support device and at least one of said sensor, said controller, and said actuator.

15. (Currently Amended) A patient positioning assembly in accordance with claim 13, wherein said means for correcting one or more errors comprises at least one of:

a. means for deactivating ~~said~~ an imaging system so as to prevent any further images from being acquired;

b. means for preventing any further corrective motion of said supporting device;

c. lockout means for turning off, during ~~the~~ an error correction process, any and all radiation and motion from any and all components of ~~said treatment apparatus~~ the patient positioning system.

16. (Previously Presented) A patient positioning assembly in accordance with claim 1, wherein said support device comprises a table.

17. (Currently Amended) A patient positioning assembly in accordance with claim 2, wherein said user interface means comprises a remote control module that provides ~~a~~ the user with remote control capabilities for remote control of the motion of said support device.

18. (Original) A patient positioning assembly in accordance with claim 17, wherein said remote control module comprises a handheld pendant.

19. (Previously Presented) A patient positioning assembly in accordance with claim 1, wherein said controller has pre-programmed therein at least a first and a second position of said support device.

20. (Original) A patient positioning assembly in accordance with claim 19, wherein said first pre-programmed position of said support device corresponds to a mounting position for facilitating the mounting of said patient onto said support device.

21. (Previously Presented) A patient positioning assembly in accordance with claim 19, wherein said second pre-programmed position of said support device corresponds to a nominal treatment position in which said patient was treated at a time period prior to a current treatment.

22. (Previously Presented) A patient positioning assembly in accordance with claim 1, wherein said pre-treatment scan data comprise 3D scan data.

23. (Currently Amended) A patient positioning assembly in accordance with claim 1, wherein said pre-treatment scan data comprise at least one of: CT scan data, PET scan data, MRI scan data, ~~and~~ or ultrasound scan data.

24. (Previously Presented) A patient positioning assembly in accordance with claim 2, wherein said user interface means comprises one or more button icons respectively associated with said one or more user selectable functions, and wherein said user selectable functions comprise at least one of:

a. a function for allowing the user to activate said imaging system so as to initiate the acquisition of one or more near real time images of said target;

b. a function for allowing the user to move the support device to at least one of:

i) a first pre-programmed position corresponding to a mounting position for facilitating the mounting of said patient onto said support device;

ii) a second pre-programmed position corresponding to a nominal treatment position;

c. a function for displaying to the user a sequence of translations and rotations corresponding to said one or more corrective motions implemented by said motion command signal; and

d. a function for allowing the user to modify said sequence of translations and rotations.

25. (Original) A patient positioning assembly in accordance with claim 24, wherein said user selectable functions further comprise:

i) a function for allowing the user to compare said translations and rotations with respective pre-specified limits for each translation and rotation;

ii) a function for allowing the user to modify one or more of said pre-specified limits; and

iii) a function for allowing the user to activate said treatment beam generator to initiate treatment delivery, upon verification that said translations and rotations identified by said motion command signal fall below said pre-specified limits.

26. (Original) A patient positioning assembly in accordance with claim 24, wherein said sequence of translations and rotations encompass up to six degrees of freedom.

27. (Previously Presented) A patient positioning assembly in accordance with claim 2, wherein said user interface means comprises at least one user interface screen.

28. (Currently Amended) A patient positioning assembly in accordance with claim 27, wherein said user interface screen comprises means for allowing the user to adjust one or more imaging parameters of ~~said~~ an imaging system.

29. (Previously Presented) A patient positioning assembly in accordance with claim 28, wherein said imaging parameters comprise at least one of:

a) an intensity of x-rays in one or more imaging beams generated by said imaging system;

b) a spectral distribution of said x-rays in said imaging beams;

c) energy of x-rays in imaging beam;

d) selection and de-selection of fiducials;

e) one or more rigid body parameters; and

f) a number of near real-time images to be acquired.

30. (Canceled)

31. (Previously Presented) A patient positioning assembly comprising:

A. a support device to support a patient during treatment; and

B. a controller coupled to the support device, said controller comprising:

a) an input module to receive pre-treatment scan data and near real time image data of a target;

b) a comparator to determine one or more corrective motions of said support device from the pre-treatment scan data and near real time image data; and

c) a signal generator coupled to said comparator for generating at least one motion command signal to implement one or more corrective motions of said support device.

32. (Previously Presented) A patient positioning assembly in accordance with claim 66, wherein the radiosurgical treatment apparatus comprises:

a. an imaging system for generating the near real time image data;

b. a robot including an articulated arm assembly; and

c. an x-ray source mounted at a distal end of said arm assembly to selectively emit an x-ray beam.

33. (Currently Amended) A patient positioning assembly in accordance with claim 31, wherein said controller further comprises user interface to enable the user to interactively control ~~the~~ a motion of the support device by implementing one or more user-selectable functions.

34. (Previously Presented) A patient positioning assembly in accordance with claim 66, wherein the controller compensates for one or more motions of said x-ray source implemented by said robot to cause a desired x-ray radiation pattern to be

delivered to said target throughout treatment.

35. (Previously Presented) A patient positioning assembly in accordance with claim 66, wherein said corrective motions of said support device, implemented by said motion command signal generated by said controller, compensate for one or more motions of said x-ray source implemented by said robot to maximize a workspace available to said treatment apparatus.

36. (Previously Presented) A patient positioning assembly in accordance with claim 66 wherein said corrective motions of said support device, implemented by said motion command signal generated by said controller, compensate for one or more patient motions of said patient that take place during treatment.

37. (Previously Presented) A patient positioning assembly in accordance with claim 36, wherein said one or more patient motions comprise at least one of:

a. a respiratory motion of said patient;

b. a muscular shifting of one or more members of said patient;

c. motion caused by one of sneezing, coughing, and hiccuping of said patient; and

d. cardiac pumping motion of the heart of the patient.

38. (Canceled)

39. (Currently Amended) A patient positioning assembly in accordance with claim 66, wherein the radiosurgical treatment apparatus is an x-ray source mounted at a distal end of an articulated arm assembly ~~or~~ of a robot-based frameless stereotactic radiosurgery system.

40. (Canceled)

41. (Previously Presented) A method, comprising:

receiving pre-treatment scan data representative of one or more pre-treatment scans of a treatment target within a patient on a support device, the pre-treatment scans showing the position and orientation of the treatment target with respect to a pre-treatment coordinate system;

receiving image data containing information regarding the near real time position and orientation of the treatment target with respect to a treatment coordinate system, the treatment coordinate system having a predetermined relationship to the pre-treatment coordinate system; and

generating at least one motion command signal for implementing one or more corrective motions of the support device to move the support device to substantially match the position and orientation of said target as shown in said pre-treatment scan data of said target with the position and orientation of said target of the near real time image data.

42. (Previously Presented) The method of claim 41, wherein receiving pre-treatment scan data, receiving image data, and generating at least one motion command signal are performed using software.

43. (Previously Presented) The method of claim 41, wherein generating the at least one motion command signal comprises comparing the position and orientation of the treatment target, as shown in the near real-time image data, with the position and orientation of the treatment target as shown in the pre-treatment scan data.

44. (Previously Presented) The method of claim 41, further comprising:

providing at least one position sensor coupled to the support device;

determining the position and orientation of the support device using the at least one position sensor; and

generating at least one sensor signal representative thereof from the at least one position sensor.

45. (Previously Presented) The method of claim 44, wherein generating the at least one motion command signal comprises comparing the position and orientation of the treatment target, as shown in the near real-time image data, with the position and orientation of the treatment target as shown in the pre-treatment scan data, and with the position and orientation, as represented in the at least one sensor signal.

46. (Previously Presented) The method of claim 43, wherein generating the at least one motion command signal further comprises calculating an amount of translations and rotations required in order for the position and orientation of the treatment target, as shown in the near real time images, to substantially match the position and orientation of the treatment target, as shown in the pre-treatment scans.

47. (Previously Presented) The method of claim 46, further comprising converting the amount of translations and rotations into one or more units of motion of the support device.

48. (Previously Presented) The method of claim 47, wherein comparing the position and orientation of the treatment target, calculating the amount of translations and rotations, and converting the amount of translations and rotations into one or more units of motion of the support device are performed using software.

49. (Previously Presented) The method of claim 47, wherein the one or more units of motion of the support device include at least three degrees of freedom.

50. (Previously Presented) The method of claim 47, wherein the one or more units of motion of the support device include at least five degrees of freedom.

51. (Currently Amended) The method of claim 41, further comprising providing at least one actuator coupled to the support device, wherein generating at least one motion command signal for implementing one or more corrective motions of the

support device to move the support device comprises moving the support device with respect to the treatment apparatus ~~is performed~~ using the at least one actuator.

52. (Previously Presented) The method of claim 41, further comprising providing an external device coupled to the support device, wherein moving the support device with respect to the treatment apparatus is performed using the external device.

53. (Previously Presented) The method of claim 52, wherein the external device is a robot.

54. (Previously Presented) The method of claim 53, wherein the robot includes an articulated arm assembly.

55. (Currently Amended) The method of claim 41, wherein receiving pre-treatment scan data comprises at least one of computerized tomography (CT), positron emission data (PET) scan data, magnetic resonance imaging (MRI) scan data, ~~and~~ or ultrasound scan data.

56. (Previously Presented) The method of claim 41, further comprising providing a user interface coupled to the support device, the user interface including one or more user-selectable functions.

57. (Currently Amended) The method of claim 56, wherein the one or more user-selectable functions comprise at least one of:

activating an imaging system so as to initiate the acquisition of one or more near real time images of said target;

adjusting one ore more imaging parameters of the imaging system;

moving the support device to at least one of:

a first pre-programmed position corresponding to a loading/unloading for mounting the patient onto the support device; and

a second pre-programmed position corresponding to a treatment position in which the patient was treated at a time period prior to a current treatment;

displaying to the user a sequence of translations and rotations corresponding to the one or more corrective motions of the support device for moving the support device with respect to the treatment apparatus;

modifying the sequence of translations and rotations;

comparing the translations and rotations with respective pre-specified limits for each translation and rotation;

modifying one or more of said pre-specified limits; and

activating a treatment beam generator of the treatment apparatus to initiate treatment delivery, upon verification that said translations and rotations identified by said motion command signal fall below said pre-specified limits.

58. (Previously Presented) The method of claim 57, wherein the imaging parameters comprise at least one of:

an intensity of x-rays in one or more imaging beams generated by said imaging system;

a spectral distribution of said x-rays in said imaging beams;

energy of x-rays in imaging beam;

selection and de-selection of fiducials;

one or more rigid body parameters; and

a number of near real-time images to be acquired.

59. (Previously Presented) The method of claim 56, wherein the user interface interactively controls the position and orientation of the support device for substantially aligning the position and orientation of the treatment target as shown in the pre-treatment scan data of the treatment target.

60. (Canceled)

61. (Currently Amended) ~~The~~ A method, comprising: ~~of claim 60~~,

providing a support device;

providing a therapeutic radiation source;

moving the support device with respect to the therapeutic radiation source in at least 3 degrees of freedom to align a treatment target with respect to the therapeutic radiation source, wherein moving the support device comprises:

determining a position and orientation of the treatment target with respect to a pre-treatment coordinate system;

determining a near real time position and orientation of the treatment target with respect to a treatment coordinate system, the treatment coordinate system having a predetermined relationship to the pre-treatment coordinate system; and

determining one or more corrective motions of the support device to move the support device with respect to the therapeutic radiation source to substantially match the position and orientation of the treatment target as shown in said pre-treatment scan data of said target with the position and orientation of the treatment target of the near real-time image data.

62. (Currently Amended) The method of claim ~~60~~ 61, wherein the therapeutic radiation source is a x-ray linear accelerator ("linac").

63. (Currently Amended) The method of claim ~~60~~ 61, wherein the treatment apparatus is a frameless stereotactic radiosurgery system.

64. (Currently Amended) The method of claim ~~60~~ 61, wherein the treatment apparatus is a gantry-based radiosurgery system.

65. (Previously Presented) A patient positioning assembly in accordance with claim 31, wherein the controller controls a motion of the support device to align the target with respect to a radiosurgical treatment apparatus.

66. (Previously Presented) A patient positioning assembly in accordance with claim 65, wherein the pre-treatment scan data is representative of pre-treatment scans of

the target showing the position and orientation of said target with respect to a pre-treatment coordinate system, and wherein the near real time image data comprises information regarding the near real time position and orientation of said target with respect to a treatment coordinate system, said treatment coordinate system having a predetermined relationship to said pre-treatment coordinate system.